The United States Coast Guard

Marine Safety Manual

Volume II: Materiel Inspection

COMDTINST 16000.7B Change 2

U.S. Department of Homeland Security
United States Coast Guard

Commandant
United States Coast Guard

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COMDTCHANGENOTE 16000
20 JULY 2016

COMMANDANT CHANGE NOTICE 16000

Subj: CH-2 TO MARINE SAFETY MANUAL VOLUME II, COMDTINST M16000.7B

1. PURPOSE. This Commandant Change Notice publishes a change to Marine Safety Manual Volume II, COMDTINST M16000.7B.

2. ACTION. All Coast Guard unit commanders, commanding officers, officers-in-charge, deputy/assistant commandants, and chiefs of headquarters staff elements shall comply with the provisions of this Commandant Change Notice. Internet release is authorized.

3. DIRECTIVES AFFECTED. With the addition of this Commandant Change Notice, Marine Safety Manual Volume II, COMDTINST M16000.7B, is updated. The following policy letters are cancelled: CG-543 Policy Letter 09-04 Change 1, CG-543 Policy Letter 11-08, CG-CVC Policy Letter 13-05 and G-MRP Policy Letter 02-96 dated June 07, 1996.

4. DISCUSSION. This does not constitute a substantial change to the content of the previous version of this Manual. The primary reason for this change is to incorporate existing policy into the Manual to reduce the number of places Coast Guard members have to reference for guidance. Numerous non-technical changes have been made throughout the document including correcting misspellings and incorrect paragraph numbering.

5. DISCLAIMER. This guidance is not a substitute for applicable legal requirements, nor is it itself a rule. It is intended to provide operational guidance for Coast Guard personnel and is not intended to nor does it impose legally-binding requirements on any party outside the Coast Guard.

6. MAJOR CHANGES.

   a. The content of Section A3, Documentation of Vessel Inspections has been edited with additional guidance on how to document dry-dock dates. This guidance can be found on page 14.

DISTRIBUTION – SDL No. 167

	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z
A																										
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NON-STANDARD DISTRIBUTION:

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COMDTCHANGENOTE 16000
25 JUN 2014

COMMANDANT CHANGE NOTICE 16000

Subj: CH-1 TO THE MARINE SAFETY MANUAL VOLUME II, COMDTINST M16000.7B

1. PURPOSE. This Commandant Change Notice publishes a change to The Marine Safety Manual Volume II, COMDTINST M16000.7B.

2. ACTION. All Coast Guard unit commanders, commanding officers, officers-in-charge, deputy/assistant commandants, and chiefs of headquarters staff elements shall comply with the provisions of this Commandant Change Notice. Internet release is authorized.

3. DIRECTIVES AFFECTED. With the addition of this Commandant Change Notice, The Marine Safety Manual Volume II, COMDTINST M16000.7B, is updated. The following Navigation and Vessel Inspection Circulars (NVIC) are cancelled: 08-68 and 03-88 Ch. 1. The following Policy Letters are cancelled: CG-CVC Policy Letter 12-08, MOC Policy Letter Nos. 1-00, 02-01, 02-02, 03-01, 01-03, 05-03 and 02-05, CG-543 Policy Letters 10-03 and 11-06, CG-3PCV Policy Letter 07-04, and G-PCV Policy Letter 06-05.

4. DISCUSSION. This does not constitute a substantial change to the content of the previous version of this Manual. The primary reason for this change is to incorporate existing policy into the Manual to reduce the number of places Coast Guard members have to reference for guidance. Numerous non-technical changes have been made throughout the document including correcting misspellings and incorrect paragraph numbering.

5. DISCLAIMER. This guidance is not a substitute for applicable legal requirements, nor is it itself a rule. It is intended to provide operational guidance for Coast Guard personnel and is not intended to nor does it impose legally-binding requirements on any party outside the Coast Guard.

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	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z
A																										
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COMDTINST M16000.7B
November 22, 2013

COMMANDANT INSTRUCTION M16000.7B

Subj: MARINE SAFETY MANUAL VOLUME II, COMDTINST M16000.7B

1. PURPOSE. This Manual establishes marine safety policies and guidance for use by industry, mariners, the General Public, and the Coast Guard, as well as other federal and state regulators, in applying statutory and regulatory requirements.

2. ACTION. All Coast Guard unit commanders, commanding officers, officers-in-charge, deputy/assistant commandants, and chiefs of headquarters staff elements shall comply with the provisions of this Manual. This REVISION is applicable to all active and reserve Coast Guard members, Coast Guard civilian employees, and Coast Guard Auxiliary members performing commercial vessel safety missions. Internet release is authorized.

3. DIRECTIVES AFFECTED. Marine Safety Manual (MSM), Volume II, COMDTINST M16000.7A is cancelled. In addition, Navigation and Vessel Inspection Circulars 06-03 and 03-08 are cancelled.

4. DISCUSSION. This revision does not constitute a substantive change to the content of the previous version of this Manual. The primary reason for this revision is a reformatting of the entire document to a Word format that will facilitate future changes and revisions. We anticipate conducting such updates on an annual basis with announcements of updates via message. We have included some textual changes which are discussed in paragraph five.

5. DISTRIBUTION. No paper distribution will be made of this REVISION. An electronic version of this Manual will be located on the following Commandant (CG-612) web sites. Intranet: https://cgportal2.uscg.mil/library/directives/SitePages/Home.aspx and Internet: http://www.uscg.mil/hq/dco/proservices.asp.

	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z
A																										
B		x			x									x			x									
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D	x	x	x	x							x															
E														x												
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USCG Marine Safety Manual, Vol. II: Materiel Inspection

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CHAPTER 1: AUTHORITY AND PROVISIONS FOR MERCHANT VESSEL INSPECTIONS

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C	24-29	Uninspected Vessel
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I-A	107-109	Mobile Offshore Drilling Units
J	110-113	Electrical Engineering
K	114-122	Small Passenger Vessels Carrying More Than 150 Passengers or with Overnight Accommodations for More Than 49 Passengers
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N	146-149	Dangerous Cargoes
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D	80	Navigation Rules
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N	140-147	Outer Continental Shelf (OCS) Activities
O	151-159	Pollution
P	160	Ports and Waterways Safety

Title 49 CFR		
Subchapter	**Part**	**Subject**
C	171-179	Hazardous Materials Regulations

2. U.S. Code (U.S.C.), Titles 33, 46, and 50

The OCMI should also maintain current copies of Titles 33, 46, and 50 U.S.C.. The following is a list of significant sections of Titles 33, 46, and 50 U.S.C. applicable to marine safety and vessel inspection:

Title 33 U.S.C.	
Citation	**Subject**
33 U.S.C. 1221-1232	Statutes for Notice of Arrival and navigation safety regulations.

Title 46 U.S.C.	
Citation	**Subject**
46 U.S.C. 5101 – 5116	Load line requirements for foreign vessels.
46 U.S.C. 2101(12), 3306(a)(5) and 49 U.S.C. 1801 -1812	Safety requirements for carriage of dangerous articles and substances aboard foreign vessels.
46 U.S.C. 2101(12), (21) and (35), 3504 and 3505	Safety requirements for foreign vessels carrying passengers from any U.S. port to any other place or country.
46 U.S.C. 2101(12), (21), (22) and (35), and Chapter 35	Inspection and certification requirements for all foreign passenger vessels which embark passengers at and carry passengers from a U.S. port. These statutes are also relevant for vessels with valid International Convention For The Safety Of Life At Sea (SOLAS) 74/78 Certificates or Canadian Certificates of Inspection that must be examined to verify compliance with the flag administration's safety verification requirements.
46 U.S.C. 2101(12) and (39), 3301(10) and Chapter 37	Safety requirements that apply, with certain stipulations, to all foreign vessels regardless of tonnage, size, or manner of propulsion, whether or not carrying freight or passengers for hire, that enter U.S. navigable waters while carrying liquid bulk cargoes that are-- a. Flammable or combustible;

Title 46 U.S.C.	
Citation	**Subject**
	b. Oil of any type or in any form, including petroleum, fuel oil, sludge, oil refuse and oil mixed with wastes, except dredged spoil; c. Designated as a hazardous substance under Section 311(b) of the Federal Water Pollution Control Act (FWPCA) (33 U.S.C. 1321); or d. Designated as hazardous materials under Section 104 of the Hazardous Materials Transportation Act (HMTA) (49 U.S.C. 1803).
46 U.S.C. 2101(21) and 3304	Permission for U.S. vessels transporting cargo to carry a limited number of individuals without being considered a "passenger vessel" for most inspection purposes, and extension of this privilege to cargo vessels of those nations that accord reciprocal treatment.
46 U.S.C. 2101(33) and 3301(7)	Directs that safety requirements of 46 U.S.C. Chapter 33 are applicable to seagoing motor vessels of 300 or more GT.
46 U.S.C. 2101(35) and 3301(8)	Safety requirements for foreign small passenger vessels carrying more than six passengers from a U.S. port.

Title 50 U.S.C.	
Citation	**Subject**
50 U.S.C. 191	Requirements for security of vessels, harbors and waterfront facilities, and provision for control of the movement of foreign vessels in U.S. waters by the local OCMI/Captain of the Port (See MSM Volume VI).

f. Definitions:

(1) Auxiliary launching systems consisting of a winch and davit arrangement are provided for free-fall lifeboats for use in those cases where it may be unsafe to launch the boat in free-fall. These systems must meet many of the same requirements as a conventional davit and winch.

(2) Fleet angle, referring to a wire rope leading to a winch drum, means the angle included between an imaginary line from the lead sheave perpendicular to the axis of the drum, and the line formed by the wire rope when led from the lead sheave to either extremity of the drum. See figure P-1 below.

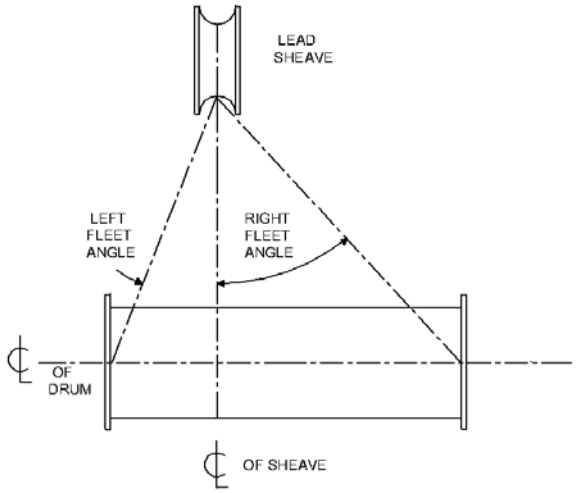

Figure P-1: Fleet angle

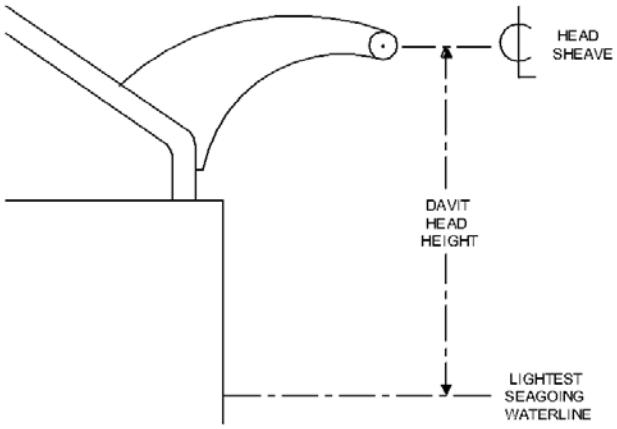

Figure P-2: Representation of davit head height for calculating lowering speed

(3) Free-fall launching systems launch a survival craft by allowing it to fall from its stowage position into the sea, with persons on board. Most free-fall systems include a ramp that the survival craft slides down before it begins its free-fall. Special seating, hull design, and fall trajectory provide for the safety of those on board, and also ensure that the craft moves away from the vessel when it enters the water, whether or not the engine has been started.

(4) Inflatable Buoyant Apparatus (IBAs) are similar to inflatable liferafts, except they do not have canopies. Larger IBAs can be used either side up. IBAs must be serviced in the same way as inflatable liferafts. On vessels, IBAs can be substituted for conventional life floats and buoyant apparatus. With the approval of the Commandant (CG-CVC), IBAs may be allowed to be substituted for inflatable liferafts on inshore waters.

(5) Marine evacuation systems consist of a slide or chute, an inflatable platform, and associated survival craft, designed to rapidly transfer large numbers of persons from an embarkation station directly to the survival craft or to the platform for subsequent embarkation into the survival craft.

2. Initial Inspections

The following inspections are intended for a vessel undergoing its initial inspection for certification. The applicable tests should also be conducted whenever new lifesaving equipment is installed on any vessel, or whenever any item of lifesaving equipment is structurally repaired, altered, or undergoes any other major repair which could affect its performance. This subpart is written on the assumption that equipment on a vessel undergoing its initial inspection is new.

a. Davit and winch launching systems for lifeboats, including auxiliary launching systems for free-fall lifeboats. (See MSM Volume II, Material Inspection, COMDTINST M16000.7 (series), Chapter C2 for detailed information on certain situations concerning boat handling equipment.)

(1) Preparation for launching.

(a) Procedure. The inspector must determine the time required for two crew members to prepare the boat for launching. Time starts with the two crew members at the boat launching station, and the boat stowed as it normally would be when the vessel is at sea. Preparation is complete once a launching crew (at least three persons) is on board and ready for launch.

(b) Acceptance criteria. The time to prepare the boat for launching must be 5 minutes or less.

(2) Light load. Operating the launching system at light load demonstrates that the mass of the boat is sufficient to overcome the frictional resistance of the winch, falls, sheaves, blocks, and associated gear. It verifies that the minimum lowering speed can be achieved in this condition. For boats with a hydrostatic lock on the release mechanism, it verifies that the lock operates at the lowest operational hydrostatic pressure. This test can generally be completed quickly, since no special loading is required for a fully equipped boat.

(a) Procedure.

[1] The boat should approximate its condition "A" weight for this test, with added weight of equipment and fuel on board. Precise loading and load measurement is not necessary, however. In addition, one person may be on board to operate an onboard winch brake control or the release mechanism. If additional personnel are needed to complete the test and to recover the boat, they may board when the boat reaches the water.

[2] Release the gripes, if necessary. Tricing, frapping, and/or bowsing gear do not need to be used for this test if they are not needed.

[3] Lower the boat by releasing the winch brake. If the winch brake is arranged for control from within the boat, a person on board the boat should operate the winch brake control.

[4] Determine lowering speed by timing the boat as it drops through a measured distance marked on the side of the vessel or on the falls, or by any other reliable means. The speed measurement should be taken only after the winch has accelerated to full-governed speed.

[5] Launch the boat into the water using the normal launching procedure as specified in the ship's training manual and the equipment markings.

[6] Recover the boat with the winch. Anyone on board the boat should disembark when it reaches deck level. No one should be on board the boat when the weight of the davit is taken up by the winch, and the davit moves into its stowage position. This is when most fall and fall attachment failures occur.

NOTE:

Release mechanisms approved under approval series 160.133 and installed prior to January 1, 2013 will typically have a hydrostatic lock that allows the hooks to be released only once the boat is in the water. However, all lifeboats approved under approval series 160.135 after January 1, 2013 will have a hydrostatic interlock or some other means to ensure the lifeboat is waterborne before the release mechanism can be activated. With the keel of the boat at or just in the water and tension on the falls, it should be verified that the hydrostatic lock prevents operation of the release mechanism. Then with the boat lowered into the water, the hydrostatic lock should open and permit operation of the release mechanism.

An automatic release mechanism (approval series 160.170) is sometimes used on a boat or survival capsule with a single fall launching system. Once set or cocked, these devices release as soon as tension is off the fall. Set these devices for automatic operation for this test. If a person will be on board the boat as it is lowered, that person should set the release mechanism for automatic operation just before the boat reaches the water.

Some older style release mechanisms such as "Rottmer" gear, typically still found in open lifeboats, will release the boat from the falls whenever the release handle is moved, whether the boat is in the water or not. Persons in command of the boat and operating these mechanisms must fully understand the danger of serious injury or death resulting from premature operation.

Release the boat from the falls using the on-load release mechanism control as the boat reaches the water. The keel of the boat should be at or in the water, but there should still be tension on the falls when the release mechanism is operated. A release handle safety pin, if fitted, should not be removed until the boat is in position for release.

(b) Acceptance criteria.

[1] There must be no deformation of or damage to the launching appliance or its connections to the vessel.

(4) Emergency Stop Control.

(a) Procedure. Once the hoist has been demonstrated to be in satisfactory operating condition, put a person on the ladder or lift platform. Lower the hoist, and with the control lever in position to lower the hoist, the person on the ladder or lift platform operates the emergency stop control. Repeat the test of the emergency stop control while hoisting. Test the proper operation of any other control provided on the ladder or lift platform.

(b) Acceptance Criteria. The emergency stop control must bring the ladder or lift platform to a safe stop regardless of the position of the on-deck control lever. Each other control on the ladder or lift platform must operate properly and safely.

s. Abandon-Ship Simulation. Hold an abandon-ship simulation. Determine the time required for all persons on board to be launched into the water in survival craft. This test is not required if the Coast Guard has witnessed a successful test on a sister vessel with the same lifesaving appliance arrangements.

(1) Procedure.

(a) Start timing when the signal to abandon ship is given, with all persons at the locations identified in the station bill (muster list).

(b) No preparation of the survival craft or launching appliance is permitted until the signal is given.

(c) This simulation must include loading and launching of sufficient survival craft to demonstrate that the acceptance criteria can be met.

(d) If the survival craft include davit-launched liferafts, one example of each launching appliance type and arrangement on the ship must be tested. If so desired, persons may be used only in the preparing and loading operations, and ballast may be substituted for the lowering and launching part of the test. The time should be recorded for the sequence of preparing, loading, and launching all of the liferafts intended to be launched from the launching station. However, if more than three liferafts are intended to be launched from the launching station, the test may be limited to three liferafts. The total time required to launch all of the liferafts can be extrapolated from this data.

(e) If the vessel is equipped with marine evacuation systems (MES), the simulation must include full deployment of at least one system, including the launching and inflation of associated liferafts. The time should be recorded for the sequence of preparing, loading, and launching all of the liferafts intended to be launched from the launching station. However, if more than three liferafts are intended to be launched from the launching station, the test may be limited to three liferafts. The total time required to launch all of the liferafts can be extrapolated from this data.

(f) During the simulation, care must be taken to minimize the hazards associated with the loading and unloading of boats. Casualties have occurred because adequate safety precautions were neglected or because personnel took needless chances.

(2) Acceptance Criteria.

(a) For cargo ships, the abandonment time must be 10 minutes or less.

(b) For passenger ships, the abandonment time must be 30 minutes or less.

t. Abandon-Ship Drill And Fire Drill. Once the vessel's initial operating crew is aboard, conduct an abandon-ship drill and a fire drill as described in section P.3.v below.

3. **Subsequent Inspections For Certification**

Each item of lifesaving equipment is inspected to determine that it is in serviceable condition. Each item not in serviceable condition is repaired or replaced. Each item of survival equipment with an expiration date on it is replaced if the expiration date has passed. The following inspections and tests are intended for each inspection for certification other than the initial inspection.

a. Davit And Winch Launching Systems For Lifeboats. Including Auxiliary Launching Systems For Free-Fall Lifeboats. (See C.2.H.7 of this manual for special considerations concerning lifeboat handling equipment.)

B. RESPONSIBLE PARTIES

1. Manufacturers

Manufacturers of marine equipment have a basic responsibility to supply equipment that is satisfactory for its intended use and in compliance with applicable standards. Regulations contain specific requirements for manufacturers to follow in certain cases, but, for many items, only good commercial quality is required.

2. Vessel Owners

Owners are expected to supply and maintain the equipment aboard their vessels in accordance with applicable regulations. When the regulations do not specify requirements for vessel equipment, the vessel owner must supply equipment that is safe and suitable for its intended use. Equipment without regulatory specifications must be installed under the cognizance of the OCMI. The vessel owner is responsible for the equipment's continued maintenance.

3. Vessel Personnel

The vessel's officers and crew must maintain equipment in a satisfactory condition, ready to perform its intended function.

4. Classification Societies

Classification societies perform some equipment manufacture oversight and some survey responsibility for ensuring proper equipment.

5. Coast Guard Technical Personnel

Commandant (CG-CVC, CG-ENG, and the Marine Safety Center (MSC)) review plans and specifications for compliance with the regulations and suitability with the intended use of equipment.

6. Coast Guard Inspection Personnel

Marine Inspectors have the final responsibility for determining whether a piece of equipment complies with requirements and is suitable for its intended use.

C. CATEGORIES OF ACCEPTABLE EQUIPMENT

1. Equipment Manufactured Under Coast Guard Control

Certain items of equipment are required to be manufactured under Coast Guard control. This control requires the submittal and approval of plans, materials, and methods of construction as well as tests and inspections by the Coast Guard during and after both manufacture and installation.

2. Approved Equipment

a. General approvals. Various items of lifesaving, firefighting, pollution prevention, and miscellaneous equipment used aboard inspected and uninspected vessels are required by statutes and regulations to be of types that are approved by the Commandant.

(1) To be an approved type, equipment must be manufactured in accordance with standards published in 46 CFR Subchapter Q (Specifications). To this end, the manufacturer must submit plans and specifications to the Commandant. After approval, the product must be labeled so that it can be identified as approved equipment.

(2) Alternatively, when specifically permitted by regulation, equipment must comply with the standards of a Commandant-recognized classification society, such as the American Bureau of Shipping (ABS). Equipment that is approved by a classification society without plan review by the Coast Guard must likewise be labeled to indicate compliance with required standards and approval.

b. Certification. Types of equipment that are considered to conform to 46 CFR Subchapter Q specifications are formally listed in the *Federal Register*.

(1) A certificate of approval is issued to the manufacturer of the equipment by Commandant (CG-CVC).

(2) Type-approved equipment that meets the specifications in Subchapter Q is listed in Equipment Lists, COMDTINST M16714.3 (series) and MISLE.

(a) Are legibly printed in a language understood by personnel engaged in the transfer operations;

(b) Are permanently posted or available where they can easily be seen and used by crewmembers;

(c) Contain a list of each oil or liquid hazardous material transferred (generic name, product information, and applicability of transfer procedures);

(d) Include an accurate description of each transfer system on the vessel (including a line diagram, the location of the shutoff valves, and description of and procedures for emptying the discharge containment system);

(e) Specify number of persons required to be on duty for transfer is indicated with the duties, by title, of each person required for each transfer operation;

(f) Include procedures and duty assignments for tending the vessel's moorings during transfer;

(g) Include procedures for operating the emergency shutdown and transfer communications, topping off tanks, ensuring that all valves used during the transfer operation are closed on completion of the operation, and reporting fuel or cargo spills (discharges);

(h) Include, in the front of the transfer procedures, any exemptions or alternatives granted; and

(i) Include appropriate amendments.

(3) Confirm that the emergency shutdown is operable from the cargo control area.

r. Drills. The PSCO should witness drills during all PSC Safety and Environmental Protection Compliance Exams (e.g. PI, PII, Random, Certificate of Compliance).

(1) Abandon ship drill. For abandon ship drills, the PSCO should do the following:

(a) Verify that the crew is properly mustered at their stations and check muster lists for accuracy. Check that the crew has properly donned lifejackets. Determine if crew members are able to communicate with each other. Ensure that crewmembers are familiar with abandon ship procedures/duties and the proper use of ship's lifesaving equipment.

(b) Lower lifeboats, when practicable, to the embarkation deck. Conduct a general examination of davits, falls, sheaves, etc., as the boat is being prepared and lowered to the embarkation deck. Verify that the lifeboat engines start properly. With the exception of passenger ships undergoing control verification examinations, do not require crews to lower, release, and exercise lifeboats in the water.

(c) During the drill, the PSCO should be satisfied that the crew is competent to safely embark and launch lifeboats and liferafts designated as primary lifesaving equipment in the times specified by SOLAS (10 minutes after the abandon ship order for a cargo ship and 30 minutes after the abandon ship order for a passenger ship).

(d) If the PSCO determines the crew is unfamiliar with their duties or incapable of safely operating the lifesaving equipment, halt the drill and notify the vessel's master that the drill was unsuccessful and that additional training and/or additional exercises are necessary. The PSCO should then provide the crew with at least one additional opportunity to demonstrate competency before detaining a vessel.

(e) If crew performance warrants vessel detention, the PSCO should cite the crew's lack of familiarity with essential shipboard operations under SOLAS XI-1/4 as the reason for detention and detail specific observations that led to the failure.

(f) The PSCO may also deem drills unsatisfactory if language barriers interfere with adequate verbal communication, or if the crew is unable to perform a satisfactory and safe drill, in spite of additional instruction and additional opportunity to demonstrate competency.

(2) Fire drill. The PSCO should witness a fire drill and evaluate the ability of the crew to respond to emergencies. The safety officer or the officer in charge should specify the location and scope of the drill.

(a) The PSCO should determine if the drill is of sufficient scope to demonstrate crew competence. All crewmembers, except those engaged in cargo operations or on watch, should participate.

(b) The PSCO should observe the alarm indication on the fire alarm panel and the responses of the vessel's officers. (A normal procedure is to send an officer or fire patrolman to investigate.) The PSCO should go to the location and describe the fire situation (smoke, flames, etc.) to the investigator and then observe how the crew reports the fire to the bridge or damage control center.

At this point, most vessels will sound the crew alarm to summon the firefighting parties and the remainder of the crew to their stations.

(c) The PSCO should also observe the firefighting party arriving on scene, breaking out their equipment, and fighting the simulated fire. Team leaders should be giving orders as appropriate to their crews and passing word back to the bridge or damage control center on the conditions.

(d) The PSCO should examine the firefighting team for proper donning of protective equipment and for proper use of their equipment. Officers should make sure that all of the firefighting gear is compatible; e.g., firefighters can properly wear the protective suit, the helmet, the air mask and breathing apparatus, and the lifeline. Merely mustering the emergency crews with their gear is not acceptable.

(e) If the PSCO determines the crew is unfamiliar with their duties or incapable of safely responding to a shipboard fire, halt the drill and notify the vessel's master that the drill was unsuccessful and that additional training and/or additional exercises are necessary. The PSCO should then provide the crew with at least one additional opportunity to demonstrate competency before detaining a vessel.

(f) If lack of performance warrants vessel detention, the PSCO should cite the crew's lack of familiarity with essential shipboard operations under SOLAS XI-1/4 as the reason for detention.

(g) The PSCO may deem drills unsatisfactory if language barriers interfere with adequate verbal communication, or if the crew is unable to perform a satisfactory and safe drill, in spite of additional instruction and several opportunities to demonstrate competency.

(3) Inability to Conduct Drills. In very limited cases, it may not be possible to conduct the required fire and abandon ship drill. The circumstances for not witnessing a drill must be exceptional. Bunkering operations or poor weather are potentially valid reasons for not conducting the abandon ship drill. If extenuating circumstances preclude a drill, but the ship is clearly well run based on its condition, documentation, and crew proficiency during other portions of the exam, PSCOs are not required to witness the drill. In these cases, PSCOs should include a statement in the MISLE narrative that drills were not conducted, the reason why, and how crew proficiency was satisfactorily determined. PSCOs should not issue a deficiency in these cases nor should they request the unit at the vessel's next port of call to witness drills. However, if there are reasons to doubt the crew's proficiency, the PSCO should work with the master to identify an

appropriate time to conduct drills when the exceptional circumstances are no longer present.

s. Steering. Steering gear failures on all classes of foreign vessels have caused serious marine casualties and pollution incidents in U.S. waters. The PSCO should witness a steering system test. The test should include the following:

(1) An operational check of the main and auxiliary steering from each remote steering gear control system and each steering position on the navigating bridge.

(2) Test the main steering gear from the alternative power supply, if installed (i.e. the feeder cable to the steering gear fed by the emergency switchboard);

(3) Verify the reading on the bridge gyrocompass matches the repeater in the after steering room;

(4) Verify the rudder angle indicator in the after steering room has the same reading as the indicator on the bridge;

(5) Test each remote steering gear control system power failure alarm and each steering gear power unit failure alarm;

(6) Test for full movement of the rudder according to the required capabilities of the steering gear;

(7) Test the means of communication between the navigating bridge and the steering gear compartment;

(8) Visually inspect the steering gear and its connecting linkage, paying particular attention to securing devices that may loosen due to vibrations; and

(9) Check for indications of potential failures involving excessive leakage of hydraulic fluid; looseness in hydraulic piping and hose connections, fasteners, or couplings; frayed electrical wiring or evidence of arcing; unusual noises during operation; or evidence of insufficient maintenance. Examples of the latter include makeshift repairs, painted-over lube fittings, and deficient maintenance that might adversely affect operation of the steering gear.

(10) For additional guidance on examining steering gear and the importance of examining steering gear linkage, hose and piping connections, refer to MSM Volume II, Material Inspection, COMDTINST M16000.7 (series), Chapter C4.

A. GENERAL PROCEDURES

1. Vessels to Which SOLAS is Applicable

The International Convention for the Safety of Life at Sea (SOLAS) is a convention of the International Maritime Organization (IMO), an agency of the United Nations. SOLAS applies to all mechanically propelled cargo and tank vessels of 500 or more Gross Tons (GT) and to all mechanically propelled passenger vessels that engage in international voyages and carry more than 12 passengers. By the IMO's definition, an international voyage means a voyage from a country to which SOLAS applies to a port outside of that country, or vice versa. A vessel's "administration" is defined as the government of a country the flag of which the vessel is eligible to sail under. In this context, vessels operating under the flag of the United States are those documented or numbered under the laws of the United States, including Guam, the Commonwealth of the Northern Mariana Islands, American Samoa, the District of Columbia, the U.S. Virgin Islands, and Puerto Rico. When in possession of a valid SOLAS certificate and in compliance with its terms, a U.S. flag vessel is entitled to all of the privileges described in the SOLAS Convention.

> **NOTE:** On 22 May 1982, the Intergovernmental Maritime Consultative Organization, or IMCO, changed its name to the International Maritime Organization (IMO).For simplicity, all IMCO resolutions passed prior to this change that remain effective are referred to below as IMO resolutions.

2. SOLAS 74/78

The requirements of the 1974 Convention (SOLAS 74) became effective on 25 May 1980. The 1978 Protocol, which modifies the original Convention, became effective on 1 June 1981. Together, they are referred to as SOLAS 74/78. Under the requirements of SOLAS 74/78, a new vessel is one for which the keel was laid on or after these effective dates. An existing vessel is one for which the keel was laid prior to these dates.

3. SOLAS Amendments

Amendments to the Convention should be expected. The first set of amendments were adopted in November 1981, as Maritime Safety Committee (MSC) Resolution MSC.1(XLV). These amendments deal primarily with Chapters II-1

and II-2, although minor changes to Chapters III, IV, V, and VI are included. These changes came into effect on 1 September 1984. A second set of amendments was adopted in June 1983. These primarily affect Chapters III and VII, with minor changes to Chapters II-1, II-2, and IV. These amendments became effective on 1 July 1986.

4. U.S. Application of SOLAS 74/78

a. General. By ratifying SOLAS 74/78, the United States has agreed to promulgate statutes, regulations, and other measures to implement the Convention. The 1978 Protocol required administrations (the government of a vessel's flag state) to institute arrangements for inspection or establish a mandatory annual survey requirement. The United States has chosen the mandatory annual survey method, to be carried out through inspection for certification program which includes periodic and annual inspections. (described later in this chapter). These measures will ensure that U.S. vessels are fit for service in terms of safety of life.

b. Authority. U.S. laws are used to enforce the terms of the Convention; no special authority is necessary. Vessel inspection regulations in Title 46, Code of Federal Regulations (CFR) generally align with the inspection requirements of SOLAS 74/78 (the only exceptions are requirements for radio equipment, which are administered by the Federal Communications Commission (FCC)). Inspection personnel generally need not refer to the Convention during inspections for certification. However, they must be thoroughly familiar with SOLAS requirements, which may be considered when inspection decisions are made (particularly when normal inspection requirements are altered).

c. Application to small passenger vessels under 100 GT (T-boats). The regulations in 46 CFR Subchapter T for small passenger vessels (under 100 GT) do not reflect the requirements of SOLAS 74/78, except by reference to the Convention. T-boats operating on international routes must apply SOLAS 74/78 requirements or hold SOLAS Exemption Certificates. Officers in Charge, Marine Inspection (OCMIs) certificating T-boats that will operate on international voyages through other inspection zones should contact the OCMI's of those zones to determine if additional requirements must be met for certification.

5. Previous SOLAS Conventions

The initial SOLAS Convention that entered into effect in 1929 was superseded in 1948, 1960, and again in 1974. SOLAS 74/78 incorporates by reference the 1929, 1948, and 1960 provisions applicable to existing vessels. Certificates granted under the 1929 and 1948 Conventions are no longer recognized by the Coast Guard. U.S. vessels with valid SOLAS 60 certificates may retain them until their expiration. All U.S. SOLAS certificates issued after 25 May 1980 must be in accordance with SOLAS 74. Certificates issued after 1 June 1981 must be in accordance with SOLAS 74/78. The Coast Guard will continue to accept valid SOLAS 60 certificates held by vessels whose administrations are parties to SOLAS 60 but have not ratified SOLAS 74, or that issued such certificates prior to 25 May 1980.

B. REFERENCES

1. International Conventions and Conferences on Marine Safety

The International Conventions and Conferences on Marine Safety publication contains the texts of the 1948 SOLAS Convention (including a summary of committee reports and background information) and the 1960 Convention. Each marine safety unit must maintain International Conventions and Conferences on Marine Safety, COMDTINST M16707.1, as required by the Directives, Publications and Reports Index, Commandant Notice (COMDTNOTE) 5600.

2. SOLAS 74/78 Protocols with Amendments

The SOLAS 74/78 Protocols with Amendments publication contains the text of International Convention for the Safety of Life At Sea (SOLAS) 74 and the 1978 Protocol and Amendments. It may be purchased through local sources.

3. Implementing Regulations

SOLAS 74/78 requirements generally are incorporated in Title 46, CFR without specific mention of the Convention. Among the regulations that do make specific mention of SOLAS 74 and its application are:

TYPE	CFR CITATION
All Vessels	46 CFR 2.01-25
Tank Vessels	46 CFR Table 30.01-5(d) footnote 6, 30.01-5(e)(1), & 31.40
Passenger Vessels	46 CFR Table 70.05-1(a) footnote 6, 70.05-3(b)(1), 70.05-10, and 71.75
Cargo and Miscellaneous Vessels	46 CFR 90.05-1(a)(1), Table 90.05-1(a) footnote 6, 90.05-10, and 91.60
Small Passenger Vessels	46 CFR 175.05-1, Table 175.05-1(a) footnote 6, 175.05-1(c), and 176.35
Oceanographic Research Vessels	46 CFR Table 188.05-1(a) footnote 6, 188.05-10, 188.10-35, and 189.60

C. CERTIFICATES ISSUED UNDER SOLAS 74/78

See MSM Volume II, Material Inspections, COMDTINST M16000.7A (series), Section A, Chapter 3.

D. APPLICATION FOR CONVENTION CERTIFICATES

1. Application to the OCMI

To apply for a SOLAS Passenger Ship Safety Certificate (PSSC), Cargo Ship Safety Equipment (SEC) and/or a Cargo Ship Safety Construction Certificate (SAFCON), or Exemption Certificate, the master, owner, or agent of a vessel must submit an Application for Inspection of U.S. Vessel, Form CG-3752. The application must indicate all certificates desired. If the request is for a SAFCON, it must also state whether the Coast Guard or a Coast Guard Authorized Classification Society (ACS) will issue it.

2. OCMI's Acknowledgement of Application

a. Passenger vessels. To acknowledge the application for SOLAS certificates, the OCMI must use the Notice of Completion of Examination for Safety Certificate, Form CG-969. A vessel may show this document to explain the lack of a valid Passenger Ship Safety Certificate if the vessel does not receive the certificate before sailing.

b. Cargo, tank, and miscellaneous vessels. Notice of Completion of Examination for Safety Certificate, Form CG-969 is not applicable to applications for SECs. A SEC must be issued by the OCMI before the vessel sails.

3. Application to the FCC

To apply for a Safety Radiotelephony/Radiotelegraphy Certificate or Exemption Certificate, the master, owner, or agent of a vessel should forward a written application to the local FCC office.

E. COORDINATION OF SOLAS BY THE FCC

1. Passenger Vessels

a. General. The Coast Guard and FCC jointly conduct the inspection of a passenger vessel for issuance of a Passenger Ship Safety Certificate.

(1) The certificate will only be issued after the Commandant receives inspection reports from the OCMI and the FCC. The FCC has agreed to coordinate its radio equipment inspections (including those of portable lifeboat radio apparatus) with inspections conducted by the Coast Guard.

(2) Refer to 47 CFR 80.59 for FCC compulsory vessel inspection requirements.

(3) Administration. After receiving an application for a COI renewal or Passenger Ship Safety Certificate, the OCMI must notify the local FCC office of the Coast Guard's anticipated inspection completion date.

(a) If the Coast Guard inspection will be completed at that port, the FCC inspection will normally be carried out on the date indicated by the OCMI.

(b) If the Coast Guard inspection will not be completed and the vessel's COI not renewed prior to the vessel's non-international voyage on the high seas, the FCC should conduct their inspection at least one business day before the sailing date.

(4) Issuance of Exemption Certificate. Once the FCC has completed their inspection, they will forward a copy of a Certificate of Compliance, Form 806 or a Letter of Exemption to the OCMI. The OCMI must forward the FCC document, Notification of Approval for Passenger Ship Safety Certificate, Form CG-969A, and a copy of the vessel's current COI to Commandant (CG-CVC). A SOLAS Exemption Certificate modifying the part of the Passenger Ship Safety Certificate covering radio equipment will only be issued upon FCC request.

2. Cargo, Tank, and Miscellaneous Vessels

The FCC conducts annual SOLAS inspections of radio equipment (including portable lifeboat radio equipment) aboard cargo, tank and miscellaneous vessels. These normally occur in conjunction with the Coast Guard inspection for certification or the mandatory annual survey.

F. ISSUANCE OF CONVENTION CERTIFICATES

1. Passenger Vessels

Once a vessel has satisfactorily completed the SOLAS inspection, the OCMI completes, Notification of Approval for Passenger Ship Safety Certificate, Form CG-969A. When the master, owner, or agent of a vessel submits a written request for exemptions from SOLAS inspection requirements, the OCMI must list any recommended exemptions on the reverse side of Notification of Approval for Passenger Ship Safety Certificate, Form CG-969A and verify that the vessel has a valid Load Line Certificate. Copies of FCC a Certificate of Compliance, Form 806 (or the Exemption Letter) and the vessel's COI are forwarded to Commandant (CG-CVC) with Notification of Approval for Passenger Ship Safety Certificate, Form CG-969A

2. Cargo, Tank, and Miscellaneous Vessels

a. Cargo Ship Safety Equipment Certificates (SEC). Once a vessel has satisfactorily completed the SOLAS inspection, the OCMI or ACS issues the vessel a SEC and its Attachment. If the vessel is a tanker, it will also

"524.6-3. Extension or Reissue of Certificates. When an international certificate issued under the terms of the International Convention for the Safety of Life at Sea to a vessel of the United States expires before or at the time the vessel reaches a foreign port or will expire before the vessel reaches a port of the United States, it may be extended by the consular officer, or a new certificate may be issued by authorities of a foreign government which is a party to the Convention, according to the preference of the master. The request must come from the master. A request of preference expressed by the agent of a United States vessel should not be honored unless the agent is acting at the master's specific request."

H. SOLAS ANNUAL SURVEY REQUIREMENTS

At a minimum, the scope of periodic or annual inspections must satisfy all SOLAS survey requirements. The following summary of SOLAS survey requirements is adapted from the IMO Assembly Resolution containing the Guidelines under the Harmonized System of Survey and Certification (HSSC).

1. Requirements

The 1978 SOLAS Protocol, Chapter 1, Regulation 6(b), requires annual surveys of all cargo and tank vessels issued SAFCONs and SECs. There are additional requirements for tank vessels over 10 years old.

2. Purpose

Mandatory surveys as prescribed in SOLAS 74/78 Chapter 1 Part B, ensure that a ship and its equipment are satisfactorily maintained in accordance Chapter 1, Regulation 11. Periodic and annual inspections enable the Coast Guard to verify the condition of vessels and their equipment. The below inspection provisions are not necessarily applicable to all types and sizes of ships.

3. When Required

A periodic or annual inspection should be held within 3 months before or after the anniversary dates of the SAFCON Certificate.

4. Scope

The exact scope of each inspection depends on the condition of the ship and its equipment.

a. The inspection should generally consist of a certificate examination, a visual examination to confirm that no unapproved modifications have been made to the vessel and its equipment, and examination and testing of vessel equipment to confirm that it is being properly maintained.

b. The inspection should include examination of the following:

• Certificate and logbook	• Firefighting equipment
• Hull and watertight integrity	• Navigational equipment
• Machinery and electrical	• Cargo equipment
• Lifesaving equipment	• Tanker operational requirements

c. Further examination and testing should be conducted if there is any doubt as to the condition of the vessel or its equipment maintenance.

5. Certificate and Logbook Examination

The certificate and logbook examination is required to ensure that certificates are valid and required entries are being made in logbooks.

a. Certificates to be checked are--

(1) All required SOLAS safety certificates;

(2) International Load Line Certificate; and

(3) Certificates issued by a classification society on behalf of the Coast Guard.

b. Lifesaving equipment records and logbook entries should be examined to--

(1) Confirm that any new equipment has been properly approved before installation, and that no changes have been made that would affect the validity of the SEC;

(2) Check that all instructions and/or notices, including the emergency station muster list, are properly posted and printed in a language understood by all personnel on board; and

(3) Check whether any fire necessitating the operation of the fixed fire extinguishing systems or the portable fire extinguishers has occurred on board since the last inspection.

c. Hull machinery and equipment certificates and records should be checked for the required examinations of--

(1) Automatic and remote control systems, such as main propulsion automatic systems; and

(2) Inert Gas Systems (IGS).

d. Logbook entries should be checked for required entries. These include the following:

(1) Entries required by SOLAS 74/78, Chapter III, Regulation 19 and 20, such as--

(a) The date of the last full muster of crew for boat and fire drill;

(b) The records indicating that lifeboat equipment was examined and found to be complete; and

(c) The last occasion the lifeboats were swung out, and which ones were lowered into the water.

e. External examination of boilers, pressure vessels, and their appurtenances, including safety devices, foundations, controls, relieving gear, high pressure and steam escape piping, insulation, and gauges.

f. Visual and operational examination, as far as feasible, of electrical machinery, emergency sources of power, switchgear, and other electrical equipment.

g. Confirmation, as far as practicable, of the operation of all emergency sources of power normally and also in the automatic mode, if they are automatic.

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8. Lifesaving Equipment

Inspection of the lifesaving gear and equipment should include:

a. Examination of all lifeboats, davits, embarkation arrangements, and launching gear. If practicable, one of the lifeboats should be lowered to the water.

b. Testing to confirm that the engine of each motor lifeboat starts satisfactorily, in both ahead and astern operation (as permitted by cargo handling conditions).

c. Checking that the inflatable liferafts have been serviced during the past 12 months, unless it is determined that the servicing has not been possible.

d. Checking that stowage of the inflatable liferafts will facilitate proper release and that launching instructions are posted.

e. Examination of the embarkation arrangement of inflatable liferafts and, when provided, the launching arrangement of davit launched liferafts.

f. Checking that lifeboats are in good condition, that the required number are fitted with self-igniting lights and self-activating smoke signals, and that all are properly stationed.

g. Checking that the rescue boat (if required) is in good condition and that stowage will facilitate rapid launching.

h. Checking for proper stowage of life jackets and random examination of their condition.

i. Checking that ship and lifeboat distress signals and the line-throwing rockets are not out of date.

j. Testing of the emergency lighting and general alarm system.

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9. Firefighting Equipment

Inspections of firefighting equipment should include the following:

a. Confirmation that fire control plans are properly posted.

b. Examination and testing, as feasible, of the fire and/or smoke detection system(s).

c. Examination of the fire main system and confirmation that each fire pump, including the emergency fire pump, can be operated so that the two required powerful jets of water can be produced simultaneously from different hydrants.

d. Confirmation that fire hoses, nozzles, applicators and spanners are in good working condition and stowed in their correct locations.

e. Examination of fixed firefighting system controls, piping, instructions and marking, checking for evidence of proper maintenance and servicing, including date of last systems tests.

f. Confirmation that all semi-portable and portable fire extinguishers are in their stowed positions, checking for evidence of proper maintenance and servicing, conducting random check for evidence of discharged containers;

g. Confirmation, as far as practicable, that the remote controls for stopping fans and machinery and shutting off fuel supplies in machinery spaces are in working order;

h. Examination of the closing arrangements of ventilators, funnel annular spaces, skylights, doorways and tunnels, where applicable; and

i. Confirmation that the firemen's outfits are complete and in good condition.

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10. Navigational Equipment